NICE National Institute for Health and Care Excellence

NICE guideline

Suspected sepsis: recognition, diagnosis and early management

NICE guideline
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This guideline is the basis of QS161 and QS192.

This guideline should be read in conjunction with NG143.

Overview

This guideline covers the recognition, diagnosis and early management of suspected sepsis. It includes recommendations on recognition and early assessment, initial treatment, escalating care, finding and controlling the source of infection, early monitoring, information and support, and training and education.

Who is it for?

- People with suspected sepsis, their families and carers
- Healthcare professionals working in primary, secondary and tertiary care

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Could this be sepsis?

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.1 When to suspect sepsis

1.1.1 Think 'could this be sepsis?' if a person presents with symptoms or signs that indicate possible infection. **[2016]**

1.1.2 Take into account that people with sepsis may have non-specific, non-localised presentations, for example feeling very unwell, and may not have a high temperature. **[2016]**

1.1.3 Pay particular attention to concerns expressed by the person and their family or carers, for example changes from usual behaviour. **[2016]**

1.1.4 Assess people who might have sepsis with extra care if there is difficulty in taking their history, for example people with English as a second language or people with communication difficulties (such as learning disabilities or autism). **[2016, amended 2024]**

1.1.5 Assess people with any suspected infection to identify:

- possible source of infection (see the recommendations on finding and controlling the source of infection)
- factors that increase risk of sepsis (see people who are most vulnerable to

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sepsis)

- any indications of clinical concern, such as new-onset abnormalities of behaviour, circulation or respiration. **[2016]**

1.1.6 During a remote assessment, when deciding whether to offer a face-to-face assessment and, if so, on the urgency of it, identify:

- factors that increase risk of sepsis (see people who are most vulnerable to sepsis) and
- indications of clinical concern such as new-onset abnormalities of behaviour, circulation or respiration. **[2016]**

1.1.7 Use a structured set of observations to assess people in a face-to-face setting to stratify risk if sepsis is suspected. (See the recommendations on face-to-face assessment and the recommendations on evaluating risk in people with suspected sepsis for the relevant population group). **[2016]**

1.1.8 Use the national early warning score (NEWS2) to assess people with suspected sepsis who are aged 16 or over, are not and have not recently been pregnant, and are in an acute hospital setting, acute mental health setting or ambulance. **[2024]**

1.1.9 Consider using an early warning score to assess people with suspected sepsis who are:

- under 16, in any setting
- pregnant or have recently been pregnant, in any setting
- 16 or over, in a community or custodial setting. **[2016, amended 2024]**

1.1.10 Suspect neutropenic sepsis in people who become unwell and:

- Are having or have had systemic anticancer treatment within the last 30 days
- Are receiving or have received immunosuppressant treatment for reasons unrelated to cancer. Use clinical judgement (based on the person's specific condition, medical history, or both, and on the treatment they received) to determine whether any past treatment may still be likely to cause

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neutropenia. **[2016, amended 2024]**

1.1.11 Refer patients with suspected neutropenic sepsis immediately for assessment in secondary or tertiary care. [This recommendation is from NICE's guideline on neutropenic sepsis in people with cancer.] **[2012]**

1.1.12 Treat people with neutropenic sepsis, regardless of cause, in line with NICE's guideline on neutropenic sepsis in people with cancer. **[2016, amended 2024]**

For a short explanation of why the committee amended the neutropenic sepsis recommendations and how this might affect practice, see the rationale and impact section on people with neutropenia or immunosuppression.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

1.2 People who are most vulnerable to sepsis

1.2.1 Take into account that people in the following groups are at higher risk of developing sepsis:

- the very young (under 1 year) and older people (over 75 years), or people who are very frail
- people who have impaired immune systems because of illness or drugs, including:
  - people having treatment for cancer with chemotherapy
  - people who have impaired immune function (for example, people with diabetes, people who have had a splenectomy, or people with sickle cell disease)
  - people taking long-term steroids
  - people taking immunosuppressant drugs to treat non-malignant

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disorders such as rheumatoid arthritis

- people who have had surgery, or other invasive procedures, in the past 6 weeks
- people with any breach of skin integrity (for example, cuts, burns, blisters or skin infections)
- people who misuse drugs intravenously
- people with indwelling lines or catheters.

See also recommendation 1.1.10 on when to suspect neutropenic sepsis. **[2016]**

1.2.2 Take into account that people who are pregnant, have given birth or had a termination of pregnancy or miscarriage in the past 6 weeks are in a high risk group for sepsis. In particular, people who:

- have impaired immune systems because of illness or drugs (see recommendation 1.2.1)
- have diabetes, gestational diabetes or other comorbidities
- needed invasive procedures (for example, caesarean section, forceps delivery, removal of retained products of conception)
- had prolonged rupture of membranes
- have or have been in close contact with people with group A streptococcal infection, for example, scarlet fever
- have continued vaginal bleeding or an offensive vaginal discharge. **[2016]**

1.2.3 Take into account the following risk factors for early-onset neonatal infection:

- Red flag risk factor:
  - Suspected or confirmed infection in another baby in the case of a multiple pregnancy.

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- Other risk factors:
  - Invasive group B streptococcal infection in a previous baby or maternal group B streptococcal colonisation, bacteriuria or infection in the current pregnancy.
  - Pre-term birth following spontaneous labour before 37 weeks' gestation.
  - Confirmed rupture of membranes for more than 18 hours before a pre-term birth.
  - Confirmed prelabour rupture of membranes at term for more than 24 hours before the onset of labour.
  - Intrapartum fever higher than 38°C if there is suspected or confirmed bacterial infection.
  - Clinical diagnosis of chorioamnionitis.

    [This recommendation is from NICE's guideline on neonatal infection.] **[2021]**

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Face to face assessment

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

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1.3 Initial assessment and examination

1.3.1 Assess temperature, heart rate, respiratory rate, blood pressure, level of consciousness and oxygen saturation in people aged 12 or over with suspected sepsis. **[2016]**

1.3.2 Assess temperature, heart rate, respiratory rate, level of consciousness, oxygen saturation and capillary refill time in children under 12 with suspected sepsis. **[2016]**

1.3.3 Measure blood pressure of children under 5 if heart rate or capillary refill time is abnormal and equipment is available, including a correctly-sized blood pressure cuff. In community settings, only do this if taking a measurement does not cause a delay in assessment or treatment. **[2016]**

1.3.4 Measure blood pressure of children aged 5 to 11 who might have sepsis if equipment is available, including a correctly-sized cuff. In community settings, only do this if taking a measurement does not cause a delay in assessment or treatment. **[2016]**

1.3.5 In community settings, measure oxygen saturation if equipment is available and taking a measurement does not cause a delay in assessment or treatment. **[2016]**

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1.3.6 Examine people with suspected sepsis for:

- mottled or ashen appearance
- cyanosis of the skin, lips or tongue
- non-blanching petechial or purpuric rash
- any breach of skin integrity (for example, cuts, burns or skin infections)
- other rash indicating potential infection.

For signs and symptoms of meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease. **[2016, amended 2024]**

1.3.7 Ask the person or their family or carers how often the person urinated in the past 18 hours. **[2016]**

1.3.8 Ask the person with suspected sepsis and their family or carers about any recent fever or rigors. **[2016]**

1.3.9 Ask the person if they have recently presented (for example to their GP or to hospital) with symptoms or signs that could indicate sepsis. **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on initial assessment and examination.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

1.3.10 As part of the initial assessment, carry out a thorough clinical examination to look for sources of infection, including sources that might need drainage or other interventions. Follow the recommendations on finding and controlling the source of infection. **[2016, amended 2024]**

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1.4 Interpreting findings

Temperature in suspected sepsis

1.4.1 Do not rely on fever or hypothermia alone to rule sepsis either in or out. **[2016]**

1.4.2 Take into account that some groups of people with sepsis may not develop a raised temperature. These include:

- people who are older or very frail
- people having treatment for cancer
- people severely ill with sepsis
- young infants or children
- people with a spinal cord injury **[2016, amended 2024]**

1.4.3 Take into account that a rise in temperature can be a physiological response, for example after surgery or trauma. **[2016]**

Heart rate in suspected sepsis

1.4.4 Interpret the heart rate of a person with suspected sepsis in context, taking into account that:

- baseline heart rate may be lower in young people and adults who are fit
- baseline heart rate in pregnancy is 10 to 15 beats per minute more than normal
- older people with an infection may not develop an increased heart rate
- older people may develop a new arrhythmia in response to infection rather than an increased heart rate
- heart rate response may be affected by medicines such as beta-blockers. **[2016]**

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Blood pressure in suspected sepsis

1.4.5 Interpret blood pressure in the context of a person's previous blood pressure, if known. Be aware that the presence of normal blood pressure does not exclude sepsis in children and young people. **[2016]**

Confusion, mental state and cognitive state in suspected sepsis

1.4.6 Interpret a person's mental state in the context of their normal function and treat changes as being significant. **[2016]**

1.4.7 Be aware that changes in cognitive function may be subtle and assessment should include history from the patient and their family or carers. **[2016]**

1.4.8 Take into account that changes in cognitive function may present as changes in behaviour or irritability in both children and adults with a learning disability or dementia. **[2016, amended 2024]**

1.4.9 Take into account that changes in cognitive function in older people may present as acute changes in functional abilities. **[2016]**

Oxygen saturation in suspected sepsis

1.4.10 Take into account that if peripheral oxygen saturation is difficult to measure in a person with suspected sepsis, this may indicate poor peripheral circulation because of shock. **[2016]**

Be aware that some pulse oximeters can underestimate or overestimate oxygen saturation levels, especially if the saturation level is borderline. Overestimation has been reported in people with dark skin. See also the NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes.

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Under 16s: evaluating risk and managing suspected sepsis

1.5 Evaluating risk level

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

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1.5.1 In people under 16, grade risk of severe illness or death from sepsis using the person's:

- history
- physical examination results and
- criteria based on age (see table 1: criteria for stratification of risk from sepsis in under 5s, table 2: criteria for stratification of risk from sepsis in children aged 5 to 11 and table 3: criteria for stratification of risk from sepsis in children and young people aged 12 to 15). **[2016]**

1.5.2 Recognise that people under 16 with suspected sepsis are at high risk of severe illness or death from sepsis if they meet any of the high risk criteria:

- For children under 5, see high risk criteria in table 1.
- For children aged 5 to 11, see high risk criteria in table 2.
- For children and young people aged 12 to 15, see high risk criteria in table 3. **[2016]**

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1.5.3 Recognise that people under 16 with suspected sepsis are at moderate to high risk of severe illness or death from sepsis if they meet any of the moderate to high risk criteria:

- For children under 5, see moderate to high risk criteria in table 1.
- For children aged 5 to 11, see moderate to high risk criteria in table 2.
- For children and young people aged 12 to 15, see moderate to high risk criteria in table 3. **[2016]**

1.5.4 If children under 16 with suspected sepsis do not meet any high or moderate to high risk criteria, see them as being at low risk of severe illness or death from sepsis. **[2016]**

Criteria for stratification of risk from sepsis in under 5s

Table 1: Criteria for stratification of risk of severe illness or death from sepsis in children under 5

Category	Age	High risk criteria	Moderate to high risk criteria
Behaviour	Any	No response to social cues Appears ill to a healthcare professional Does not wake, or if roused does not stay awake Weak high-pitched or continuous cry	Not responding normally to social cues No smile Wakes only with prolonged stimulation Decreased activity Parent or carer concern that child is behaving differently from usual

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Category	Age	High risk criteria	Moderate to high risk criteria
Respiratory	Any	Grunting Apnoea Oxygen saturation of less than 90% in air or increased oxygen requirement over baseline See recommendation 1.4.10 for safety warnings about the use of pulse oximeters	Oxygen saturation of less than 92% in air or increased oxygen requirement over baseline Nasal flaring See recommendation 1.4.10 for safety warnings about the use of pulse oximeters
Respiratory	Under 1 year	Raised respiratory rate: 60 breaths per minute or more	Raised respiratory rate: 50 to 59 breaths per minute
Respiratory	1 to 2 years	Raised respiratory rate: 50 breaths per minute or more	Raised respiratory rate: 40 to 49 breaths per minute
Respiratory	3 to 4 years	Raised respiratory rate: 40 breaths per minute or more	Raised respiratory rate: 35 to 39 breaths per minute
Circulation and hydration	Any	Bradycardia: heart rate less than 60 beats per minute	Capillary refill time of 3 seconds or more Reduced urine output For catheterised patients, passed less than 1 ml/kg of urine per hour
Circulation and hydration	Under 1 year	Rapid heart rate: 160 beats per minute or more	Rapid heart rate: 150 to 159 beats per minute
Circulation and hydration	1 to 2 years	Rapid heart rate: 150 beats per minute or more	Rapid heart rate: 140 to 149 beats per minute

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Category	Age	High risk criteria	Moderate to high risk criteria
Circulation and hydration	3 to 4 years	Rapid heart rate: 140 beats per minute or more	Rapid heart rate: 130 to 139 beats per minute
Skin	Any	Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching petechial or purpuric rash For signs and symptoms of meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease.	Pallor of skin, lips or tongue
Temperature	Any	Less than 36ºC	-
Temperature	Under 3 months	38°C or more	-
Temperature	3 to 6 months	-	39°C or more
Other	Any	-	Leg pain Cold hands or feet

Criteria for stratification of risk from sepsis in children aged 5 to 11

Table 2: Criteria for stratification of risk of severe illness or death from sepsis in children aged 5 to 11 years

Category	Age	High risk criteria	Moderate to high risk criteria
Behaviour	Any	Objective evidence of altered behaviour or mental state Appears ill to a healthcare professional Does not wake or if roused does not stay awake	Not behaving normally Decreased activity Parent or carer concern that the child is behaving differently from usual

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Category	Age	High risk criteria	Moderate to high risk criteria
Respiratory	Any	Oxygen saturation of less than 90% in air or increased oxygen requirement over baseline See recommendation 1.4.10 for safety warnings about the use of pulse oximeters	Oxygen saturation of less than 92% in air or increased oxygen requirement over baseline See recommendation 1.4.10 for safety warnings about the use of pulse oximeters
Respiratory	Aged 5 years	Raised respiratory rate: 29 breaths per minute or more	Raised respiratory rate: 24 to 28 breaths per minute
Respiratory	Aged 6 to 7 years	Raised respiratory rate: 27 breaths per minute or more	Raised respiratory rate: 24 to 26 breaths per minute
Respiratory	Aged 8 to 11 years	Raised respiratory rate: 25 breaths per minute or more	Raised respiratory rate: 22 to 24 breaths per minute
Circulation and hydration	Any	Heart rate less than 60 beats per minute	Capillary refill time of 3 seconds or more Reduced urine output For catheterised patients, passed less than 1 ml/kg of urine per hour
Circulation and hydration	Aged 5 years	Raised heart rate: 130 beats per minute or more	Raised heart rate: 120 to 129 beats per minute
Circulation and hydration	Aged 6 to 7 years	Raised heart rate: 120 beats per minute or more	Raised heart rate: 110 to 119 beats per minute

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Category	Age	High risk criteria	Moderate to high risk criteria
Circulation and hydration	Aged 8 to 11 years	Raised heart rate: 115 beats per minute or more	Raised heart rate: 105 to 114 beats per minute
Temperature	Any	-	Tympanic temperature less than 36°C
Skin	Any	Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching petechial or purpuric rash For signs and symptoms of meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease.	-
Other	Any	-	Leg pain Cold hands or feet

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Criteria for stratification of risk from sepsis in children aged 12 to 15, pregnant people, and people aged 16 or over in non-acute settings

Table 3: Criteria for stratification of risk of severe illness or death from sepsis in children (in any settings) aged 12 to 15, and in people aged 16 or above if they are in community or custodial settings or if they are in an acute setting and are or have recently been pregnant

Category	High risk criteria	Moderate to high risk criteria
History	Objective evidence of new altered mental state	History from patient, friend or relative of new onset of altered behaviour or mental state History of acute deterioration of functional ability Impaired immune system (illness or drugs including oral steroids) Trauma, surgery or invasive procedures in the last 6 weeks
Respiratory	Raised respiratory rate: 25 breaths per minute or more New need for oxygen (40% FiO2 or more) to maintain saturation more than 92% (or more than 88% in known chronic obstructive pulmonary disease) See recommendation 1.4.10 for safety warnings about the use of pulse oximeters	Raised respiratory rate: 21 to 24 breaths per minute
Blood pressure	Systolic blood pressure 90 mmHg or less or systolic blood pressure more than 40mmHg below normal	Systolic blood pressure 91 to 100 mmHg

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Category	High risk criteria	Moderate to high risk criteria
Circulation and hydration	Raised heart rate: more than 130 beats per minute Not passed urine in previous 18 hours. For catheterised patients, passed less than 0.5 ml/kg of urine per hour	Raised heart rate: 91 to 130 beats per minute (100 to 130 beats per minute in pregnancy) or new-onset arrhythmia Not passed urine in the past 12 to 18 hours For catheterised patients, passed 0.5 ml/kg to 1 ml/kg of urine per hour
Temperature	-	Tympanic temperature less than 36°C
Skin	Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching petechial or purpuric rash For signs and symptoms of meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease.	Signs of potential infection, including redness, swelling or discharge at surgical site or breakdown of wound

1.6 Managing suspected sepsis outside acute hospital settings

When to transfer immediately to an acute hospital setting

1.6.1 Refer people under 16 with suspected sepsis for emergency medical care if:

- they meet any high risk criteria (see tables 1, 2 and 3: criteria for stratification of risk from sepsis in children and young people under 16) or
- their immunity is impaired by drugs or illness and they meet any moderate to high risk criteria.

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Use the most appropriate means of transport (usually 999 ambulance).

Emergency care requires facilities for resuscitation to be available and, depending on local services, may be emergency department, medical admissions unit and paediatric ambulatory unit or paediatric medical admissions unit. **[2016]**

1.6.2 Pre-alert secondary care (through GP or ambulance service) when any high risk criteria are met in a person under 16 with suspected sepsis outside of an acute hospital, and transfer them immediately. **[2016]**

Managing the condition while awaiting transfer

1.6.3 In remote and rural locations where transfer time to emergency department is routinely more than 1 hour, ensure GPs have mechanisms in place to give antibiotics to people under 16 with high risk criteria in pre-hospital settings. For high risk criteria, see tables 1 to 3 on criteria for stratification of risk from sepsis. **[2016, amended 2024]**

1.6.4 In remote and rural locations where combined transfer and handover times to emergency department are greater than 1 hour:

- ambulance services should consider whether they need to put mechanisms in place to be able to give antibiotics to people with high risk criteria if antibiotics have not been given before by a GP (see recommendation 1.5.2 on evaluating risk level)
- paramedics who are thinking about giving antibiotics should follow local guidelines or seek advice from more senior colleagues, if needed. **[2016, amended 2024]**

See also the recommendations on choice of antibiotic therapy for people with suspected sepsis.

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If immediate transfer is not required

1.6.5 Assess people under 16 who are outside acute hospital settings with suspected sepsis and any moderate to high risk criteria to:

- make a definitive diagnosis of their condition
- decide whether their condition can be treated safely outside hospital.

If a definitive diagnosis is not reached or the person's condition cannot be treated safely outside an acute hospital setting, refer them urgently for emergency care. **[2016]**

1.6.6 If a person under 16 with suspected sepsis does not meet any high risk or moderate to high risk criteria, provide them with information about:

- symptoms to monitor and
- how to access medical care if they are concerned.

Also see information at discharge for people assessed for suspected sepsis, but not diagnosed with sepsis. **[2016]**

1.7 Managing suspected sepsis in acute hospital settings

Initial investigations to find the source of infection

1.7.1 For people in hospital who have suspected infections:

- start looking for the source of infection (see the section on finding and controlling the source of infection)
- take microbiological and blood samples before giving an antimicrobial.

See the UK standards for microbiology investigations. **[2016, amended 2024]**

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1 or more high risk criteria

Assessment, blood tests and antibiotics

1.7.2 For people under 16 who have suspected sepsis and meet 1 or more high risk criteria:

- arrange for the senior clinical decision maker to urgently assess the person's condition and think about alternative diagnoses to sepsis
- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen
- give a broad-spectrum antimicrobial at the maximum recommended dose, without delay (within 1 hour of identifying that they meet any high risk criteria), if antibiotics have not already been given for this episode of sepsis
- discuss with a consultant.

  Also see the recommendations on finding and controlling the source of infection and choice of antibiotic therapy. **[2016, amended 2024]**

1.7.3 Ensure urgent assessment mechanisms are in place to deliver antibiotics when any high risk criteria are met in a person under 16 in secondary care (within 1 hour of meeting a high risk criterion in an acute hospital setting). **[2016]**

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1.7.4 Give parenteral antibiotics to children under 3 months as follows:

- children younger than 1 month with fever
- all children aged 1 to 3 months with fever who appear unwell
- children aged 1 to 3 months with white blood cell count less than 5×10^9/litre or greater than 15×10^9/litre.

[This recommendation is from NICE's guideline on fever in under 5s.] **[2007, amended 2013]**

Intravenous fluids

1.7.5 For children under 12 with suspected sepsis, any high risk criteria and lactate over 4 mmol/litre:

- give intravenous fluid bolus without delay (within 1 hour of identifying that they meet any high risk criteria), in line with recommendations on intravenous fluids for people with suspected sepsis and
- refer to a critical care specialist or team for them to review the management of the person's condition, including their need for central venous access and initiation of inotropes or vasopressors.

Referral may be a formal referral process or discussion with a specialist in intensive care or intensive care outreach team. **[2016]**

1.7.6 For children and young people aged 12 to 15 with suspected sepsis, any high risk criteria and **either** lactate over 4 mmol/litre **or** systolic blood pressure less than 90 mmHg:

- give intravenous fluid bolus without delay (within 1 hour of identifying that they meet any high risk criteria), in line with recommendations on intravenous fluids for people with suspected sepsis and
- refer to a critical care specialist or team for them to review the management of the person's condition, including their need for central venous access and initiation of inotropes or vasopressors.

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Referral may be a formal referral process or discussion with a specialist in intensive care or intensive care outreach team. **[2016]**

1.7.7 For children and young people under 16 with suspected sepsis, any high risk criteria and lactate between 2 and 4 mmol/litre, give intravenous fluid bolus without delay (within 1 hour of identifying that they meet any high risk criteria), in line with recommendations on intravenous fluids for people with suspected sepsis. **[2016]**

1.7.8 For people under 16 with suspected sepsis, any high risk criteria and lactate below 2 mmol/litre, consider giving an intravenous fluid bolus in line with recommendations on intravenous fluids for people with suspected sepsis. **[2016, amended 2024]**

Monitoring and escalation

1.7.9 Monitor people under 16 with suspected sepsis who meet any high risk criteria continuously, or a minimum of once every 30 minutes depending on setting. Physiological track and trigger systems should be used to monitor all people. **[2016]**

1.7.10 Monitor the mental state of people under 16 with suspected sepsis. Consider using the Glasgow Coma Scale (GCS) or AVPU ('alert, voice, pain, unresponsive') scale. **[2016]**

1.7.11 Alert a consultant to attend in person if a person under 16 with suspected sepsis and any high risk criteria does not respond within 1 hour of any intervention. **[2016, amended 2024]**

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2 or more moderate to high risk criteria

Children under 12

1.7.12 For children under 12 with suspected sepsis and 2 or more moderate to high risk criteria:

- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen
- arrange for a clinician to review the child's condition and venous lactate results within 1 hour of meeting 2 or more moderate to high risk criteria.

  A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016, amended 2024]**

1.7.13 For children under 12 with suspected sepsis who meet 2 or more moderate to high risk criteria and have lactate over 2 mmol/litre, treat their condition as if it met one or more high risk criteria. **[2016]**

1.7.14 For children under 12 with suspected sepsis who meet 2 or more moderate to high risk criteria, have lactate of 2 mmol/litre or lower, and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly

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- ensure a senior clinical decision maker reviews the child's condition and their need for antibiotics within 3 hours of meeting 2 or more moderate to high risk criteria. **[2016]**

Children and young people aged 12 to 15

1.7.15 For children and young people aged 12 to 15 with suspected sepsis and **either** 2 or more moderate to high risk criteria **or** systolic blood pressure 91 to 100 mmHg:

- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen
- arrange for a clinician to review the person's condition and venous lactate results within 1 hour of meeting 2 or more moderate to high risk criteria.

  A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016, amended 2024]**

1.7.16 For children and young people aged 12 to 15 with suspected sepsis who meet 2 or more moderate to high risk criteria and have **either** lactate over 2 mmol/litre **or** evidence of acute kidney injury, treat their condition as if it met 1 or more high risk criteria. **[2016]**

For definition of acute kidney injury, see NICE's guideline on acute kidney injury.

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[2016]

1.7.17 For children and young people aged 12 to 15 with suspected sepsis who meet 2 or more moderate to high risk criteria, have lactate of 2 mmol/litre or lower, have no evidence of acute kidney injury, and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the person's condition and need for antibiotics within 3 hours of meeting 2 or more moderate to high risk criteria. **[2016]**

1 moderate to high risk criterion

1.7.18 For people under 16 with suspected sepsis who meet only 1 moderate to high risk criterion:

- arrange for clinician review within 1 hour of meeting a moderate to high risk criterion and
- perform blood tests if indicated.

  A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016, amended 2024]**

1.7.19 For children under 12 with suspected sepsis who meet only 1 moderate to high risk criterion and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the child's condition and need for antibiotics within 3 hours of meeting a moderate to high risk criterion. **[2016]**

1.7.20 For children and young people aged 12 to 15 with suspected sepsis who meet only 1 moderate to high risk criterion, have lactate of less than 2 mmol/litre and no evidence of acute kidney injury, and in whom a definitive condition cannot be

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identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the person's condition and need for antibiotics within 3 hours of meeting moderate to high risk criterion.

  For a definition of acute kidney injury, see NICE's guideline on acute kidney injury. **[2016]**

No high risk or moderate to high risk criteria

1.7.21 For people under 16 who have suspected sepsis and meet no high risk or moderate to high risk criteria:

- arrange for clinician review
- use clinical judgement to manage their condition.

  A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016]**

Discharge

1.7.22 Before discharging people who have been assessed for suspected sepsis, provide information on:

- the management of their definitive condition (if identified) and
- warning signs for sepsis (see information at discharge for people assessed for suspected sepsis). **[2024]**

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Pregnant or recently pregnant people: evaluating risk and managing suspected sepsis

1.8 Evaluating risk level

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.8.1 In people aged 16 or over who are or have recently been pregnant, grade risk of severe illness or death from sepsis using:

- the person's history
- physical examination results and
- table 3: criteria for stratification of risk from sepsis in people who are or have recently been pregnant). **[2016]**

1.8.2 Recognise that people aged 16 or over with suspected sepsis who are or have recently been pregnant are at:

- high risk of severe illness or death from sepsis if they meet any of the high risk criteria in table 3: criteria for stratification of risk from sepsis in people who are or have recently been pregnant
- moderate to high risk of severe illness or death from sepsis if they meet any of the moderate to high risk criteria in table 3: criteria for stratification of risk

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from sepsis in people who are or have recently been pregnant. **[2016]**

1.8.3 If people aged 16 or over with suspected sepsis who are or have recently been pregnant do not meet any high risk or moderate to high risk criteria, see them as being at low risk of severe illness or death from sepsis. **[2016]**

1.9 Managing suspected sepsis outside acute hospital settings

When to transfer immediately to an acute hospital setting

1.9.1 If they meet any high risk criteria, refer people aged 16 or over with suspected sepsis who are or were recently pregnant and are outside acute hospital settings for emergency medical care (see table 3: criteria for stratification of risk from sepsis in people who are or have recently been pregnant).

Use the most appropriate means of transport (usually 999 ambulance).

Emergency care requires facilities for resuscitation to be available and, depending on local services, may be an emergency department or medical admissions unit and, for children and young people, a paediatric ambulatory unit or paediatric medical admissions unit. **[2016]**

1.9.2 Pre-alert secondary care (through GP or ambulance service) when any high risk criteria are met in a person aged 16 or over with suspected sepsis who is or has recently been pregnant and is outside of an acute hospital, and transfer the person immediately. **[2016]**

Managing the condition while awaiting transfer

1.9.3 In remote and rural locations where transfer time to emergency department is routinely more than 1 hour, ensure GPs have mechanisms in place to give antibiotics to people aged 16 or over with suspected sepsis who are or have

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recently been pregnant and meet high risk criteria in pre-hospital settings. For high risk criteria, see table 3: in children aged 12 to 15, pregnant people, and people aged 16 or over in non-acute settings. **[2016, amended 2024]**

1.9.4 In remote and rural locations where combined transfer and handover times to emergency department are greater than 1 hour:

- ambulance services should consider whether they need to put mechanisms in place to be able to give antibiotics to people with high risk criteria if antibiotics have not been given before by a GP (see recommendation 1.8.2 on evaluating risk of severe illness or death from sepsis)
- paramedics who are thinking about giving antibiotics should follow local guidelines or seek advice from more senior colleagues, if needed. **[2016, amended 2024]**

  See also the recommendations on choice of antibiotic therapy for people with suspected sepsis.

If immediate transfer is not required

1.9.5 Assess people aged 16 or over with suspected sepsis who are or have recently been pregnant, are outside acute hospital settings, and meet any moderate to high risk criteria to:

- make a definitive diagnosis of their condition
- decide whether their condition can be treated safely outside hospital.

  If a definitive diagnosis is not reached or the person's condition cannot be treated safely outside an acute hospital setting, refer them urgently for emergency care. **[2016]**

1.9.6 If a person aged 16 or over with suspected sepsis who is or has recently been pregnant does not meet any high risk or moderate to high risk criteria, provide the person with information about:

- symptoms to monitor and

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- how to access medical care if they are concerned.

  Also see information at discharge for people assessed for suspected sepsis, but not diagnosed with sepsis. **[2016]**

1.10 Managing suspected sepsis in acute hospital settings

Initial investigations to find the source of infection

1.10.1 For people in hospital who have suspected infections:

- start looking for the source of infection (see the section on finding and controlling the source of infection)
- take microbiological and blood samples before giving an antimicrobial.

  See the UK standards for microbiology investigations. **[2016, amended 2024]**

1 or more high risk criteria

Assessment, blood tests and antibiotics

1.10.2 For people aged 16 or over with suspected sepsis who are or have recently been pregnant and meet 1 or more high risk criteria:

- arrange for the senior clinical decision maker to immediately assess the person's condition and think about alternative diagnoses to sepsis
- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture

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  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen

- give a broad-spectrum antimicrobial at the maximum recommended dose without delay (within 1 hour of identifying that they meet any high risk criteria), if antibiotics have not already been given for this episode of sepsis
- discuss with a consultant.

  Also see the recommendations on finding and controlling the source of infection and choice of antibiotic therapy. **[2016, amended 2024]**

1.10.3 Ensure urgent assessment mechanisms are in place to deliver antibiotics when any high risk criteria are met in secondary care by a person aged 16 or over who is or has recently been pregnant (within 1 hour of meeting a high risk criterion in an acute hospital setting). **[2016]**

Intravenous fluids

1.10.4 For people aged 16 or over with suspected sepsis who are or have recently been pregnant, meet any high risk criteria and have **either** lactate over 4 mmol/litre **or** systolic blood pressure less than 90 mmHg:

- give intravenous fluid bolus without delay (within 1 hour of identifying that they meet any high risk criteria), in line with recommendations on intravenous fluids for people with suspected sepsis and
- refer to a critical care specialist or team for them to review the management of the person's condition, including their need for central venous access and initiation of inotropes or vasopressors.

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Referral may be a formal referral process or discussion with a specialist in intensive care or intensive care outreach team. **[2016]**

1.10.5 For people aged 16 or over with suspected sepsis who are or have recently been pregnant, meet any high risk criteria and have lactate between 2 and 4 mmol/litre, give intravenous fluid bolus without delay (within 1 hour of identifying that they meet any high risk criteria), in line with recommendations on intravenous fluids for people with suspected sepsis. **[2016]**

1.10.6 For people aged 16 or over with suspected sepsis who are or have recently been pregnant, meet any high risk criteria and have lactate of below 2 mmol/litre, consider giving an intravenous fluid bolus (in line with recommendations on intravenous fluids for people with suspected sepsis). **[2016, amended 2024]**

Monitoring and escalation

1.10.7 Monitor people aged 16 or over with suspected sepsis who are or have recently been pregnant and meet any high risk criteria continuously, or a minimum of once every 30 minutes depending on setting. Physiological track and trigger systems should be used to monitor all adult patients. **[2016]**

1.10.8 Monitor the mental state of people aged 16 or over with suspected sepsis who are or have recently been pregnant. Consider using a scale such as the Glasgow Coma Scale (GCS) or AVPU ('alert, voice, pain, unresponsive') scale. **[2016]**

1.10.9 Alert a consultant to attend in person if a person aged 16 or over with suspected sepsis who is or has recently been pregnant and meets any high risk criteria does not respond within 1 hour of any intervention. **[2016, amended 2024]**

2 or more moderate to high risk criteria

1.10.10 For people aged 16 or over with suspected sepsis who are or have recently been pregnant and **either** meet 2 or more moderate to high risk criteria **or** have systolic blood pressure 91 to 100 mmHg:

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- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen
- arrange for a clinician to review the person's condition and venous lactate results within 1 hour of meeting 2 or more moderate to high risk criteria.

  A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016, amended 2024]**

1.10.11 For people aged 16 or over with suspected sepsis who are or have recently been pregnant, meet 2 or more moderate to high risk criteria and have **either** lactate over 2 mmol/litre **or** evidence of acute kidney injury, treat their condition as if it met 1 or more high risk criteria.

For definition of acute kidney injury, see NICE's guideline on acute kidney injury. **[2016]**

1.10.12 For people aged 16 or over with suspected sepsis who are or have recently been pregnant, meet 2 or more moderate to high risk criteria, have lactate of 2 mmol/litre or lower, have no evidence of acute kidney injury, and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the person's condition and need for antibiotics within 3 hours of meeting 2 or more moderate to high risk

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criteria. **[2016]**

1 moderate to high risk criterion

1.10.13 For people aged 16 or over with suspected sepsis who are or have recently been pregnant and meet only 1 moderate to high risk criterion:

- arrange for clinician review within 1 hour of meeting a moderate to high risk criterion
- perform blood tests if indicated.

A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016]**

1.10.14 For people aged 16 or over with suspected sepsis who are or have recently been pregnant, meet only 1 moderate to high risk criterion, have lactate of less than 2 mmol/litre, have no evidence of acute kidney injury, and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the person's condition and need for antibiotics within 3 hours of meeting moderate to high risk criterion. **[2016]**

No high risk or moderate to high risk criteria

1.10.15 For people aged 16 or over with suspected sepsis who are or have recently been pregnant and meet no high risk or moderate to high risk criteria:

- arrange for clinician review
- use clinical judgement to manage their condition.

A 'clinician' should be a medically qualified practitioner or equivalent who has

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antibiotic prescribing responsibilities. **[2016]**

Discharge

1.10.16 Before discharging people who have been assessed for suspected sepsis, provide information on:

- the management of their definitive condition (if identified) and
- warning signs for sepsis (see information at discharge for people assessed for suspected sepsis). **[2024]**

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Over 16s (not pregnant or recently pregnant): evaluating risk and managing suspected sepsis

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.11 Evaluating risk level

In community and custodial settings

1.11.1 For people aged 16 or over in the community and in custodial settings, grade risk of severe illness or death from sepsis using the person's:

- history
- physical examination results and
- criteria based on age (for people aged 16 or over who are not and have not recently been pregnant, see table 3: criteria for stratification of risk from sepsis in people aged 16 or over who are in the community or in a custodial setting. **[2016, amended 2024]**

1.11.2 Recognise that people aged 16 or over with suspected sepsis in the community and in custodial settings are at:

- high risk of severe illness or death from sepsis if they meet any of the high

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risk criteria in table 3: criteria for stratification of risk from sepsis in people aged 16 or over who are in the community or in a custodial setting

- moderate to high risk of severe illness or death from sepsis if they meet any of the moderate to high risk criteria in table 3: criteria for stratification of risk from sepsis in people aged 16 or over who are in the community or in a custodial setting. **[2016, amended 2024]**

1.11.3 If people aged 16 or over with suspected sepsis in the community and in custodial settings do not meet any high or moderate to high risk criteria, see them as being at low risk of severe illness or death from sepsis. **[2016, amended 2024]**

In acute hospital settings, acute mental health settings and ambulances

1.11.4 In people aged 16 or over, grade risk of severe illness or death from sepsis using the person's:

- history
- physical examination results (especially symptoms and signs of infection – in line with the recommendations on when to suspect sepsis) and
- NEWS2 score.

  Interpret the NEWS2 scores within the context of the persons' underlying physiology and comorbidities. **[2024]**

1.11.5 When evaluating the risk of severe illness or death from sepsis in people aged 16 or over with suspected or confirmed infection, use clinical judgement to interpret the NEWS2 score and recognise that:

- a score of 7 or more suggests high risk of severe illness or death from sepsis
- a score of 5 or 6 suggests a moderate risk of severe illness or death from sepsis

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- a score of 1 to 4 suggests a low risk of severe illness or death from sepsis
- a score of 0 suggests a very low risk of severe illness or death from sepsis
- if a single parameter contributes 3 points to their NEWS2 score, request a high-priority review by a clinician with core competencies in the care of acutely ill patients (FY2 or above), for a definite decision on the person's level of risk of severe illness or death from sepsis. **[2024]**

1.11.6 Consider evaluating the person's risk of severe illness or death from sepsis as being higher than suggested by their NEWS2 score alone if any of the following is present:

- mottled or ashen appearance
- non-blanching petechial or purpuric rash
- cyanosis of skin, lips or tongue. **[2024]**

1.11.7 Consider evaluating the person's risk of severe illness or death from sepsis as being higher than suggested by their NEWS2 score alone if there is cause for concern because of deterioration or lack of improvement of the person's condition since:

- any previous NEWS2 score was calculated
- any interventions have taken place.

  This should include taking into account any NEWS2 score calculated or intervention carried out before initial assessment in the emergency department. **[2024]**

For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on evaluating risk level in people with suspected sepsis.

Full details of the evidence and the committee's discussion are in evidence review A: stratifying risk of severe illness or death from sepsis.

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When to recalculate a NEWS2 score

1.11.8 Recalculate the NEWS2 score and re-evaluate risk of sepsis periodically, in line with the AoMRC statement on the initial antimicrobial treatment of sepsis (2022):

- every 30 minutes, for those at high risk of severe illness or death from sepsis
- every hour, for those at moderate risk of severe illness or death from sepsis
- every 4 to 6 hours, for those at low risk of severe illness or death from sepsis
- when standard observations are carried out, in line with local protocol, for those at very low risk of severe illness or death from sepsis. **[2024]**

1.11.9 If there is deterioration or an unexpected change in the person's condition, recalculate the NEWS2 score and re-evaluate their risk of sepsis. **[2024]**

For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on evaluating risk level in people with suspected sepsis.

Full details of the evidence and the committee's discussion are in evidence review A: stratifying risk of severe illness or death from sepsis.

1.12 Managing suspected sepsis outside acute hospital settings

When to transfer immediately to an acute hospital setting

In community and custodial settings

1.12.1 If they meet any high risk criteria, refer people aged 16 or over with suspected sepsis in the community and in custodial settings for emergency medical care (see table 3: criteria for stratification of risk from sepsis in people aged 16 or over who are in the community or in a custodial setting).

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Use the most appropriate means of transport (usually 999 ambulance).

Emergency care requires facilities for resuscitation to be available and, depending on local services, may be an emergency department or medical admissions unit. **[2016, amended 2024]**

1.12.2 Pre-alert secondary care (through GP or ambulance service) when any high risk criteria are met in a person aged 16 or over with suspected sepsis in the community or in a custodial setting and transfer them immediately. **[2016, amended 2024]**

In acute mental health settings

1.12.3 For people at high risk of severe illness or death from sepsis who are in an acute mental health setting, follow local emergency protocols on treatment and ambulance transfer. **[2024]**

For a short explanation of why the committee made this recommendation and how it might affect practice, see the rationale and impact section on when to transfer immediately: people in mental health settings.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

Transfer by ambulance for people with consecutive NEWS2 scores of 5 or above

1.12.4 Ambulance crews should consider a time-critical transfer and pre-alerting the hospital for people aged 16 or over with suspected or confirmed infection who **either** have consecutive NEWS2 scores of 5 or above **or** show cause for significant clinical concern. **[2024]**

1.12.5 When deciding whether a time-critical transfer and pre-alerting the hospital is needed for someone aged 16 or over with consecutive NEWS2 scores of 5 or

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above and suspected or confirmed infection, take into account:

- local guidelines and protocols in relation to clinician scope of practice
- agreements on transfer to hospital
- advance care planning
- end of life care planning. **[2024]**

For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on transfer by ambulance for people with consecutive NEWS2 scores of 5 or above.

Full details of the evidence and the committee's discussion are in evidence review B: managing and treating suspected sepsis in acute hospital settings; antibiotic treatment in people with suspected sepsis.

Managing the condition while awaiting transfer

1.12.6 In ambulances and acute hospital settings, on taking over care for someone whose risk of severe illness or death from sepsis has originally been evaluated in the community or in a custodial setting, evaluate their risk of severe illness or death from sepsis using NEWS2**. [2024]**

1.12.7 In remote and rural locations where transfer time to emergency department is routinely more than 1 hour, ensure GPs have mechanisms in place to give antibiotics to people with high risk criteria in pre-hospital settings. For high risk criteria, see table 3: criteria for stratification of risk from sepsis in people aged 16 or over who are in the community or in a custodial setting. **[2016, amended 2024]**

1.12.8 In remote and rural locations where combined transfer and handover times to emergency department are greater than 1 hour:

- ambulance services should consider whether they need to put mechanisms in place to be able to give antibiotics to people at high risk of severe illness or

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death from sepsis if antibiotics have not been given before by a GP (see recommendation 1.11.4 on evaluating risk of severe illness or death from sepsis).

- paramedics who are thinking about giving antibiotics should follow local guidelines. **[2016, amended 2024]**

  See also the recommendations on choice of antibiotic therapy.

For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on managing suspected sepsis in acute hospital settings: when to count time from (time zero).

Full details of the evidence and the committee's discussion are in evidence review B: managing and treating suspected sepsis in acute hospital settings; antibiotic treatment in people with suspected sepsis.

If immediate transfer is not required

In community or custodial settings

1.12.9 In the community and in custodial settings, assess people aged 16 or over with suspected sepsis who meet any moderate to high risk criteria (as per table 3: criteria for stratification of risk from sepsis in people aged 16 or over who are in the community or in a custodial setting) to:

- make a definitive diagnosis of their condition
- decide whether their condition can be treated safely outside hospital.

  If a definitive diagnosis is not reached or the person's condition cannot be treated safely outside an acute hospital setting, refer them urgently for emergency care. **[2016, amended 2024]**

1.12.10 In the community and in custodial settings, provide information about the following to people aged 16 or over with suspected sepsis who do not meet any

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high risk or moderate to high risk criteria:

- symptoms to monitor and
- how to access medical care if they are concerned.

  Also see information at discharge for people assessed for suspected sepsis, but not diagnosed with sepsis. **[2016, amended 2024]**

In acute mental health settings

1.12.11 In acute mental health settings, assess people aged 16 or over who are at moderate risk of severe illness and death from sepsis (see recommendation 1.11.4 on evaluating risk of severe illness or death from sepsis) to:

- make a definitive diagnosis of their condition
- decide whether their condition can be treated safely outside hospital.

1.12.12 If a definitive diagnosis is not reached or the person's condition cannot be treated safely outside an acute hospital setting, follow local emergency protocols on treatment and ambulance transfer. **[2016, amended 2024]**

1.12.13 In acute mental health settings, provide information about the following to people aged 16 or over who are at low or very low risk of sepsis:

- symptoms to monitor and
- how to access medical care if they are concerned.

  Also see information at discharge for people assessed for suspected sepsis, but not diagnosed with sepsis. **[2016, amended 2024]**

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For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on managing suspected sepsis outside acute hospital settings: if immediate transfer is not required.

Full details of the evidence and the committee's discussion are in evidence review B: managing and treating suspected sepsis in acute hospital settings; antibiotic treatment in people with suspected sepsis.

1.13 Managing suspected sepsis in acute hospital settings

Initial investigations to find the source of infection

1.13.1 For people in hospital who have suspected infections:

- start looking for the source of infection (see the section on finding and controlling the source of infection)
- take microbiological and blood samples before giving an antimicrobial.

  See the UK standards for microbiology investigations. **[2016, amended 2024]**

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High risk of severe illness or death from sepsis

In January 2024, we updated the recommendations in this section to incorporate use of NEWS2.

We did not review the evidence on other aspects of management. Evidence for tests and interventions recommended in this section was last reviewed in 2016. We are currently reviewing the evidence and will consider making new recommendations or updating existing recommendations on:

- rapid antigen testing
- indicators of organ hypoperfusion
- intravenous fluid therapy
- vasopressors.

This update is expected to publish in 2025. See the update page for more information.

A person is at high risk of severe illness or death from sepsis if they have suspected or confirmed infection and a NEWS2 score of 7 or above.

A person is also at high risk of severe illness or death from sepsis if they have suspected or confirmed infection, a NEWS2 score below 7, and:

- a single parameter contributes 3 points to their NEWS2 score and a medical review has confirmed that they are at high risk (see recommendation 1.11.4 on evaluating risk of severe illness or death from sepsis) or
- there are any other clinical reasons for concern (see recommendations 1.11.6 and 1.11.7 on taking causes for clinical concern into account when evaluating risk of severe illness or death from sepsis).

1.13.2 For people aged 16 or over who are at high risk of severe illness or death from sepsis:

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- arrange for a clinician with core competencies in the care of acutely ill patients (FY2 level or above) to urgently assess the person's condition and think about alternative diagnoses to sepsis
- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen
- give antibiotics in line with recommendation 1.13.3 and the recommendations on choice of antibiotic therapy
- refer to the senior clinical decision maker as soon as possible
- use clinical judgement to decide whether to discuss with a consultant. **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on managing suspected sepsis in acute hospital settings: high and moderate risk of severe illness or death from sepsis.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

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Antibiotics

1.13.3 Give people aged 16 or over who are at high risk of severe illness or death from sepsis broad-spectrum intravenous antibiotic treatment, within 1 hour of calculating the person's NEWS2 score on initial assessment in the emergency department or on ward deterioration. Only give antibiotics if they have not been given before for this episode of sepsis (see recommendations 1.12.7 and 1.12.8 on managing the condition while awaiting transfer).

Also see the recommendations on finding and controlling the source of infection and choice of antibiotic therapy. **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on managing suspected sepsis: type and timing of antibiotics.

Full details of the evidence and the committee's discussion are in evidence review B: managing and treating suspected sepsis in acute hospital settings; antibiotic treatment in people with suspected sepsis.

Intravenous fluids

1.13.4 For people aged 16 or over with a high risk of severe illness or death from sepsis and **either** lactate over 2 mmol/litre **or** systolic blood pressure less than 90 mmHg, give intravenous fluid bolus without delay (within 1 hour of identifying that they are at high risk) in line with recommendations on intravenous fluids for people with suspected sepsis. **[2024]**

1.13.5 For people aged 16 or over with a high risk of severe illness or death from sepsis and lactate of 2 mmol/litre or lower, consider giving an intravenous fluid bolus (in line with recommendations on intravenous fluids for people with suspected sepsis). **[2024]**

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Monitoring and escalation

1.13.6 Recalculate the NEWS2 score periodically, in line with the recommendations on when to recalculate a NEWS2 score. **[2024]**

1.13.7 If a person aged 16 years or over who is at high risk of severe illness or death from sepsis does not respond within 1 hour of any intervention:

- ensure the senior clinical decision maker attends in person and
- refer to or discuss with a critical care specialist or team and
- inform the responsible consultant. **[2024]**

For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on managing suspected sepsis in acute hospital settings: high and moderate risk of severe illness or death from sepsis.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

Moderate risk of severe illness or death from sepsis

A person is at moderate risk of severe illness or death from sepsis if they have suspected or confirmed infection and a NEWS2 score of 5 or 6.

A person is also at moderate risk of severe illness or death from sepsis if they have suspected or confirmed infection, a NEWS2 score below 5, and:

- a single parameter contributes 3 points to their NEWS2 score, and a medical review has confirmed that they are at moderate risk (see recommendation 1.11.4 on evaluating risk of severe illness or death from sepsis) or
- there are any other clinical reasons for concern (see recommendations 1.11.6 and 1.11.7 on taking causes for clinical concern into account when evaluating risk of severe illness or death from sepsis).

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1.13.8 For people aged 16 or over with moderate risk of severe illness or death from sepsis:

- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen
- arrange for a clinician with core competencies in the care of acutely ill patients (FY2 level or above) to review the person's condition and venous lactate results within 1 hour of the person being assessed as at moderate risk. **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on managing suspected sepsis in acute hospital settings: high and moderate risk of severe illness or death from sepsis.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

1.13.9 For people at moderate risk of severe illness or death from sepsis, a clinician with core competencies in the care of acutely ill patients (FY2 level or above) should consider:

- deferring administration of a broad-spectrum antibiotic treatment for up to

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3 hours after calculating the person's first NEWS2 score on initial assessment in the emergency department or on ward deterioration and

- using this time to gather information for a more specific diagnosis (see recommendations on finding and controlling the source of infection and choice of antibiotic therapy)
- discussing with a senior clinical decision maker.

Once a decision is made to give antibiotics, do not delay administration any further. **[2024]**

1.13.10 For someone with a NEWS2 score of 5 or 6 and a single parameter contributing 3 points to their total NEWS2 score, use clinical judgement to determine the likely cause of the 3 points in one parameter. If the likely cause is:

- the current infection, manage as high risk and give broad-spectrum antibiotic treatment in line with recommendation 1.13.3
- something else (such as a pre-existing condition), manage as moderate risk and follow recommendation 1.13.9. **[2024]**

For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on managing suspected sepsis: type and timing of antibiotics.

Full details of the evidence and the committee's discussion are in evidence review B: managing and treating suspected sepsis in acute hospital settings; antibiotic treatment in people with suspected sepsis.

1.13.11 For people aged 16 or over at moderate risk of severe illness or death from sepsis:

- recalculate the NEWS2 score periodically, in line with the recommendations on when to recalculate a NEWS2 score
- if there is deterioration or no improvement, escalate care to a clinician with core competencies in the care of acutely ill patients (FY2 level or above).

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[2024]

1.13.12 For people aged 16 or over with a moderate risk of severe illness or death from sepsis and **either** lactate over 2 mmol/litre **or** evidence of acute kidney injury, treat their condition as if they were at high risk of severe illness or death from sepsis.

For definition of acute kidney injury, see NICE's guideline on acute kidney injury. **[2024]**

For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on managing suspected sepsis in acute hospital settings: high and moderate risk of severe illness or death from sepsis.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

Low risk of severe illness or death from sepsis

A person is at low risk of severe illness or death from sepsis if they have suspected or confirmed infection and a NEWS2 score of 1 to 4 (see recommendation 1.11.4 on evaluating risk of severe illness or death from sepsis) **or** a NEWS2 score of 0 and cause for clinical concern (see recommendations 1.11.6 and 1.11.7 on taking causes for clinical concern into account when evaluating risk of severe illness or death from sepsis).

1.13.13 For people aged 16 or over at low risk of severe illness or death from sepsis:

- arrange for registered health practitioner review within 1 hour of the person being assessed as at low risk
- perform blood tests if indicated. **[2024]**

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For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on low or very low risk of severe illness or death from sepsis.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

1.13.14 For people at low risk of severe illness or death from sepsis, request assessment by a clinician with core competencies in the care of acutely ill patients (FY2 level or above) for them to consider:

- deferring administration of a broad-spectrum antibiotic treatment for up to 6 hours after calculating the person's first NEWS2 score on initial assessment in the emergency department or on ward deterioration and
- using this time to gather information for a more specific diagnosis (see recommendations on finding and controlling the source of infection and choice of antibiotic therapy).

  Once a decision is made to give antibiotics, do not delay administration any further. **[2024]**

1.13.15 For someone with a NEWS2 score of 3 or 4 and a single parameter contributing 3 points to their total NEWS2 score, use clinical judgement to determine the likely cause of the 3 points in one parameter. If the likely cause is:

- the current infection, manage as moderate or high risk and:
  - for moderate risk, give broad-spectrum antibiotic treatment in line with recommendation 1.13.9
  - for high risk, give broad-spectrum antibiotic treatment in line with recommendation 1.13.3
- something else (such as a pre-existing condition), manage as low risk and follow recommendation 1.13.14. **[2024]**

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For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on managing suspected sepsis: type and timing of antibiotics.

Full details of the evidence and the committee's discussion are in evidence review B: managing and treating suspected sepsis in acute hospital settings; antibiotic treatment in people with suspected sepsis.

1.13.16 For people aged 16 or over at low risk of severe illness or death from sepsis:

- recalculate the NEWS2 score periodically, in line with the recommendations on when to recalculate a NEWS2 score
- if there is deterioration or no improvement, escalate care to a clinician with core competencies in the care of acutely ill patients (FY2 level or above). **[2024]**

For a short explanation of why the committee made the 2024 recommendations and how they might affect practice, see the rationale and impact section on low or very low risk of severe illness or death from sepsis.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

Very low risk of severe illness or death from sepsis

A person is at very low risk of severe illness or death from sepsis if they have suspected or confirmed infection and a NEWS2 score of 0 (see recommendation 1.11.4 on evaluating risk of severe illness or death from sepsis).

1.13.17 For people who are at very low risk of severe illness or death from sepsis:

- arrange for review by a registered health practitioner
- use clinical judgement to manage their condition and escalate if appropriate

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- recalculate the NEWS2 score periodically, in line with the recommendations on when to recalculate a NEWS2 score. **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on low or very low risk of severe illness or death from sepsis.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

Discharge

1.13.18 Before discharging people who have been assessed for suspected sepsis, provide information on:

- the management of their definitive condition (if identified) and
- warning signs for sepsis (see information at discharge for people assessed for suspected sepsis). **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on managing suspected sepsis in acute hospital settings: discharge.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

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Antibiotic therapy, intravenous fluid and oxygen

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.14 Choice of antibiotic therapy for people with suspected sepsis

Everyone

1.14.1 When the source of infection is confirmed or microbiological results are available:

- review the choice of antibiotic(s) and
- change the antibiotic(s) according to results, using a narrower-spectrum antibiotic, if appropriate. **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on managing suspected sepsis: type and timing of antibiotics.

Full details of the evidence and the committee's discussion are in evidence review B: managing and treating suspected sepsis in acute hospital settings; antibiotic treatment in people with suspected sepsis.

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1.14.2 For all people with suspected sepsis and a clear source of infection, use existing local antimicrobial guidance. **[2016]**

1.14.3 If meningococcal disease is specifically suspected (fever and purpuric rash), give appropriate doses of:

- parenteral benzyl penicillin in community settings and
- intravenous ceftriaxone in hospital settings.

[This recommendation is adapted from NICE's guideline on bacterial meningitis and meningococcal disease.]

1.14.4 Follow the recommendations in NICE's guideline on antimicrobial stewardship: systems and processes for effective antimicrobial medicine use when prescribing and using antibiotics to treat people with suspected or confirmed sepsis. **[2016]**

Newborn babies under 28 days

1.14.5 Treat newborn babies under 28 days presenting in hospital with suspected sepsis in their first 72 hours with intravenous benzylpenicillin and gentamicin. **[2016]**

1.14.6 Treat newborn babies under 28 days who are more than 40 weeks corrected gestational age who present with community acquired sepsis with ceftriaxone 50 mg/kg unless already receiving an intravenous calcium infusion at the time. If 40 weeks corrected gestational age or below or receiving an intravenous calcium infusion use cefotaxime 50 mg/kg every 6 to 12 hours, depending on the age of the baby. **[2016]**

Under 3 months old

1.14.7 For children younger than 3 months, give an additional antibiotic active against listeria (for example, ampicillin or amoxicillin). **[2016]**

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Under 18s excluding newborn babies

1.14.8 For people under 18 years (excluding newborn babies under 28 days) with suspected community acquired sepsis of any cause give ceftriaxone 80 mg/kg once a day with a maximum dose of 4 g daily at any age. For newborn babies under 28 days, see recommendation 1.14.6. **[2016, amended 2024]**

1.14.9 For people under 18 years (excluding newborn babies under 28 days) with suspected sepsis who are already in hospital, or who are known to have previously been infected with or colonised with ceftriaxone-resistant bacteria, consult local guidelines for choice of antibiotic. For newborn babies under 28 days, see recommendation 1.14.5. **[2016, amended 2024]**

People aged 18 or over

1.14.10 For people aged 18 years and over who need an empirical intravenous antimicrobial for suspected sepsis but who have no confirmed diagnosis, use an intravenous antimicrobial from the agreed local formulary and in line with local (where available) or national guidelines. **[2016]**

1.15 Intravenous fluids for people with suspected sepsis

Type of fluid

1.15.1 If newborn babies under 28 days need intravenous fluid resuscitation, use glucose-free crystalloids that contain sodium in the range 130 to 154 mmol/litre, with a bolus of 10 to 20 ml/kg over less than 10 minutes. [This recommendation is from NICE's guideline on intravenous fluid therapy in children and young people in hospital.] **[2017]**

1.15.2 If people up to 16 years need intravenous fluid resuscitation, use glucose-free crystalloids that contain sodium in the range 130 to 154 mmol/litre, with a bolus of 10 ml/kg over less than 10 minutes. Take into account pre-existing conditions

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(for example, cardiac disease or kidney disease), because smaller fluid volumes may be needed. [This recommendation is from NICE's guideline on intravenous fluid therapy in children and young people in hospital.] **[2017]**

1.15.3 If people over 16 years need intravenous fluid resuscitation, use crystalloids that contain sodium in the range 130 to 154 mmol/litre with a bolus of 500 ml over less than 15 minutes. [This recommendation is from NICE's guideline on intravenous fluid therapy in adults in hospital.] **[2017]**

1.15.4 Consider human albumin solution 4 to 5% for fluid resuscitation only in patients with sepsis and shock. **[2016]**

1.15.5 Do not use starch-based solutions or hydroxyethyl starches for fluid resuscitation for people with sepsis. **[2016]**

Mode of delivery

1.15.6 Use a pump, or syringe if no pump is available, to deliver intravenous fluids for resuscitation to children under 12 with suspected sepsis who need fluids in bolus form. **[2016]**

1.15.7 If using a pump or flow controller to deliver intravenous fluids for resuscitation to people over 12 years with suspected sepsis who need fluids in bolus form ensure device is capable of delivering fluid at required rate for example at least 2000 ml/hour in adults. **[2016]**

When to deliver a second bolus

1.15.8 Reassess the patient after completion of the intravenous fluid bolus, and if no improvement give a second bolus. If there is no improvement after a second bolus:

- for people under 16 and people who are or have recently been pregnant, alert a consultant to attend in person (in line with recommendation 1.7.11 and recommendation 1.10.9)

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- for people over 16 who are not pregnant or have not recently been pregnant, ensure the senior clinical decision maker attends in person (in line with recommendation 1.13.7). **[2016, amended 2024]**

1.16 Using oxygen for people with suspected sepsis

1.16.1 Give oxygen to achieve a target saturation of 94–98% for people aged 18 years and over or 88–92% for those at risk of hypercapnic respiratory failure. **[2016]**

1.16.2 Oxygen should be given to people under 18 years with suspected sepsis who have signs of shock or oxygen saturation (SpO2) of less than 92% when breathing air. Treatment with oxygen should also be considered for children with an SpO2 of greater than 92%, as clinically indicated. See recommendation 1.4.10 for safety warnings about the use of pulse oximeters. **[2016]**

Be aware that some pulse oximeters can underestimate or overestimate oxygen saturation levels, especially if the saturation level is borderline. Overestimation has been reported in people with dark skin. See also the NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes.

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Finding and controlling the source of infection

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.17 Everyone

1.17.1 Tailor investigations of the sources of infection to the person's clinical history and to findings from examination. **[2016]**

1.17.2 Consider urine analysis and chest X-ray to identify the source of infection in all people with suspected sepsis. **[2016]**

1.17.3 Consider imaging of the abdomen and pelvis if no likely source of infection is identified after clinical examination and initial tests. **[2016]**

1.17.4 Involve the relevant surgical team early on if surgical or radiological intervention is suitable for the source of infection. The surgical team or interventional radiologist should:

- seek senior advice about the timing of intervention
- carry the intervention out as soon as possible, in line with the advice received. **[2024]**

For guidance on contraindications to lumbar puncture, see the section on lumbar puncture in the NICE guideline on bacterial meningitis and meningococcal disease.

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For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on finding and controlling the source of infection.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

1.18 Children aged 3 months or less

1.18.1 Perform lumbar puncture in the following children with suspected sepsis (unless contraindicated, see the section on lumbar puncture in the NICE guideline on bacterial meningitis and meningococcal disease):

- children younger than 1 month
- all children aged 1 to 3 months who appear unwell
- children aged 1 to 3 months with a white blood cell count less than 5×10^9/litre or greater than 15×10^9/litre. **[2016]**

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Information and support for all people with suspected sepsis

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.19 Communicating and sharing information

1.19.1 In discussions with people with suspected sepsis or their family or carers, and when sharing information with them:

- follow the recommendations in NICE's guidelines on patient experience in adult NHS services and babies, children and young people's experience of healthcare
- ensure that the information given supports shared decision making, and follow the recommendations in NICE's guideline on shared decision making
- tailor the timing, content and delivery of information to the person's needs and preferences, paying particular attention to people with additional needs such as autism or learning disabilities, or people whose first language is not English. **[2024]**

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1.20 People who have sepsis and their families and carers

1.20.1 Ensure a care team member is nominated to give information to families and carers, particularly in emergency situations such as in the emergency department. This should include:

- an explanation that the person has sepsis, and what this means
- an explanation of any investigations and the management plan
- regular and timely updates on treatment, care and progress. **[2016]**

1.20.2 Ensure information is given without using medical jargon. Check regularly that people understand the information and explanations they are given. **[2016]**

1.20.3 Give people with sepsis and their family members and carers opportunities to ask questions about diagnosis, treatment options, prognosis and complications. Be willing to repeat any information as needed. **[2016]**

1.20.4 Give people with sepsis and their families and carers information about national charities and support groups that provide information about sepsis and the causes of sepsis. **[2016]**

1.21 Information at discharge for people assessed for suspected sepsis, but not diagnosed with sepsis

1.21.1 Give people who have been assessed for sepsis but have been discharged without a diagnosis of sepsis (and their family or carers, if appropriate) verbal and written information about:

- what sepsis is, and why it was suspected
- what tests and investigations have been done
- instructions about which symptoms to monitor

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- when to get medical attention if their illness continues
- how to get medical attention if they need to seek help urgently. **[2016]**

1.21.2 Confirm that people understand the information they have been given, and what actions they should take to get help if they need it. **[2016]**

1.22 Information at discharge for people at increased risk of sepsis

1.22.1 Ensure people who are at increased risk of sepsis (for example after surgery) are told before discharge about symptoms that should prompt them to get medical attention and how to get it. **[2016]**

See NICE's guideline on neutropenic sepsis for information for people with neutropenic sepsis.

1.23 Information at discharge for people who have had sepsis

1.23.1 Ensure people and their families and carers have been informed that they have had sepsis. **[2016]**

1.23.2 Ensure discharge notifications to GPs include the diagnosis of sepsis. **[2016]**

1.23.3 Give people who have had sepsis (and their families and carers, when appropriate) opportunities to discuss their concerns. These may include:

- why they developed sepsis
- whether they are likely to develop sepsis again
- if more investigations are necessary
- details of any community care needed, for example, related to peripherally

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inserted central venous catheters (PICC) lines or other intravenous catheters

- what they should expect during recovery
- arrangements for follow-up, including specific critical care follow up if relevant
- possible short-term and long-term problems. **[2016]**

1.23.4 Give people who have had sepsis and their families and carers information about national charities and support groups that provide information about sepsis and causes of sepsis. **[2016]**

1.23.5 Advise carers they have a legal right to have a carer's assessment of their needs, and give them information on how they can get this.

See NICE's guideline on rehabilitation after critical illness in adults for recommendations on rehabilitation and follow up after critical illness.

See NICE's guideline on bacterial meningitis and meningococcal disease for follow-up of people who have had meningococcal disease.

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Training and education

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.24 Healthcare staff involved in assessing clinical condition

1.24.1 Ensure all healthcare staff and students involved in assessing people's clinical condition are given regular, appropriate training in identifying people who might have sepsis. This includes primary, community care and hospital staff including those working in care homes. **[2016]**

1.25 Healthcare professionals involved in triage or early management

1.25.1 Ensure all healthcare professionals involved in triage or early management are given regular appropriate training in identifying, assessing and managing suspected sepsis. This should include:

- risk stratification strategies
- local protocols for early treatments, including antibiotics and intravenous fluids
- criteria and pathways for escalation, in line with their health care setting.

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[2016]

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Terms used in this guideline

Critical care specialist or team

An intensivist or intensive care outreach team, or a specialist in intensive care or paediatric intensive care.

Not responding to intravenous fluid resuscitation

Signs that the person is not responding to resuscitation include lack of improvement or worsening:

- tachycardia
- level of consciousness
- blood pressure
- respiratory rate
- blood lactate
- urine output
- peripheral perfusion
- blood gases.

Recently pregnant

Someone is considered to have recently been pregnant:

- in the 24 hours following a termination of pregnancy or miscarriage
- for 4 weeks after giving birth.

Clinical judgement is needed after miscarriage (particularly in the second trimester) or termination (particularly in the second or third trimester), because it is not clear how

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quickly people return to pre-pregnancy levels in these situations.

Sepsis

Sepsis is a life-threatening organ dysfunction due to a dysregulated host response to infection.

Suspected sepsis

Suspected sepsis is used to indicate people who might have sepsis and require face-to-face assessment and consideration of urgent intervention.

Senior clinical decision maker

A 'senior clinical decision maker' for people under 18 is a paediatric or emergency care qualified doctor of grade ST4 or above or equivalent.

A 'senior clinical decision maker' for people aged 18 years or over is a clinician of grade ST3 or above or equivalent.

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Recommendations for research

1 Epidemiological study on presentation and management of sepsis in England

What is the incidence, presentation and management of sepsis in the United Kingdom? **[2016]**

Why this is important

The lack of robust UK based epidemiological studies on the incidence and outcomes from sepsis have been clear throughout the guideline development process. A large epidemiological study to collect information about where sepsis is being treated, patient interventions and patient outcomes would provide population based statistics on epidemiology of sepsis which are necessary to support evaluation of interventions, planning of services and service redesign. The mortality and morbidity and service complexity associated with severe infection and sepsis, and the need to use broad-spectrum antimicrobials to treat sepsis, justifies the cost required to set up such a study.

2 Association between NEWS2 bands (0, 1 to 4, 5 to 6, 7 or above) and risk of severe illness or death

In adults and young people (16 and over) with suspected sepsis in acute hospital settings, ambulance trusts and acute mental health facilities, what is the association between NEWS2 bands (0, 1 to 4, 5 to 6, 7 or above) and risk of severe illness or death? In adults and young people (16 and over) with suspected sepsis in acute hospital settings, ambulance trusts and acute mental health facilities, what is the association between the NEWS2 score of 3 in a single parameter and risk of severe illness or death? **[2024]**

Why this is important

The NEWS2 has been introduced in 2017 and is widely used across the NHS pre-hospital and acute care settings. However, evidence on the NEWS2 was not found. It is important to investigate, over a 5- to 10-year period, the success, safety and possible implications

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on people with suspected sepsis and clinical staff of using the NEWS2 to stratify the risk of severe illness or death from sepsis.

Lack of data to stratify risk of severe illness or death from sepsis and estimate possible risk of deterioration in people with a single parameter contributing 3 points to their NEWS2 score is also of great concern. Data relating to this is scarce and its interpretation contradictory.

3 Derivation of clinical decision rules in suspected sepsis

Is it possible to derive and validate a set of clinical decision rules or a predictive tool to rule out sepsis which can be applied to patients presenting to hospital with suspected sepsis? **[2016]**

Why this is important

In primary care and emergency departments people with suspected sepsis are often seen by relatively inexperienced doctors. Many of these people will be in low and medium risk groups but evidence is lacking as to who can be sent home safely and who needs intravenous or oral antibiotics. The consequences of getting the decision making wrong can be catastrophic and therefore many patients are potentially over-investigated and admitted inappropriately. Current guidance is dependent on use of individual variables informed by low quality evidence.

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Rationale and impact

These sections briefly explain why the committee made the updated recommendations and how they might affect practice.

People with neutropenia or immunosuppression

Recommendations 1.1.10 and 1.1.12

Why the committee made the recommendations

The committee carefully thought about care for people with neutropenia or immunosuppression, such as those on anticancer treatment and immunosuppressant therapies, because sepsis shares many of the same signs and symptoms as neutropenic sepsis. The committee agreed that people with suspected neutropenic sepsis are at very high risk and should be treated in line with NICE's guideline on neutropenic sepsis in people with cancer.

Return to recommendations

Initial assessment and examination

Recommendation 1.3.9

Why the committee made the recommendation

The committee agreed that the initial assessment is an important opportunity to identify people who are most at risk of sepsis. They noted that sepsis is hard to recognise (particularly in the initial stages), because the signs and symptoms are not specific. So when people who are unwell present multiple times to a GP or hospital with non-specific signs and symptoms, they may not initially be identified as at risk of sepsis. However, the committee agreed that this group is more likely to have sepsis, and they highlighted the need to ask people if they have presented before.

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How the recommendation might affect practice

Asking people about multiple presentations can be done as part of the existing initial assessment, so should not require additional resources to implement. This information could allow sepsis to be diagnosed and treatment started earlier. This could reduce costs, because fewer critical care interventions would be needed at a later point.

Return to recommendation

Evaluating risk level in people with suspected sepsis in acute hospital settings, acute mental health settings and ambulances

Recommendation 1.1.8 and recommendations 1.11.4 to 1.11.9

Why the committee made the recommendations

Using the NEWS2 to evaluate risk from sepsis

Evidence showed an increased risk of ICU admission and mortality in people with suspected sepsis aged 16 and over associated with a NEWS2 score of 5 or more. This supports the findings of the 2022 AoMRC statement on the initial antimicrobial treatment of sepsis. It is also in line with the clinical experience of the committee.

The committee agreed, based on their knowledge and experience, that:

- the 4 NEWS2 score bands outlined in the 2022 AoMRC statement should be used to determine the level of risk from sepsis for someone in any of the settings where NEWS2 has been endorsed by NHS England (acute hospital settings, acute mental health settings and ambulances) **[2024]**
- a person's risk level should be re-evaluated each time new observations are made, in line with observation frequencies in the AoMRC report **[2024]**
- a person's risk level should be re-evaluated when there is deterioration or an unexpected change. **[2024]**

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Interpreting NEWS2 scores

The committee discussed the importance of clinical judgement when interpreting the NEWS2 scores. They agreed that the NEWS2 should be used as a tool to support clinical decision making, not to replace clinical judgement. A NEWS2 score should thus be interpreted within the context of the patient's history and physical examination results.

The committee also acknowledged that NEWS2 can be less accurate in people with certain conditions, such as people with spinal injury or heart or lung disease, because of their altered baseline physiology.

The committee also highlighted that mottled or ashen appearance, non-blanching rash or cyanosis of skin, lips or tongue can be signs of meningococcal disease. **[2024]**

NEWS2 score of 0

The committee discussed the care for someone with a NEWS2 score of 0. They were concerned that a score of 0 may be interpreted as indicating that there was no risk and no action was needed. They emphasised that people with a possible or confirmed infection and a NEWS2 score of 0 are still at risk of sepsis and should receive routine NEWS2 score monitoring in line with local practice.

They also agreed that acute illness is a dynamic state and treatment priorities must be adjusted over time. They agreed to highlight that deterioration or lack of improvement in the person's condition might indicate the need to take more urgent actions than suggested by their NEWS2 score alone, depending on any previous NEWS2 score or action already taken. **[2024]**

Single parameter contributing 3 points to a NEWS2 score

In the NEWS2 framework as defined by the Royal College of Physicians for the assessment of acute illness severity (that is, not specific to sepsis), specific attention is given to a NEWS2 score of 3 in a single parameter, which is classified as low-medium risk. The AoMRC report on the initial antimicrobial treatment of sepsis uses the NEWS2 to evaluate risk of severe illness or death from sepsis. It does not support systematic use of a single parameter contributing 3 points to a NEWS2 score to escalate care but does state that 'abnormal single parameters should be used to alert clinicians to the need for more detailed observation and investigation'.

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The committee considered this issue at length. Despite the lack of evidence, and based on their clinical expertise, they agreed that:

- a single parameter contributing 3 points to a NEWS2 score is an important red flag suggesting an increased risk of organ dysfunction and further deterioration and
- in the presence of such a parameter, clinical judgement is key to carefully consider the likely cause of its extreme value and whether the person's condition needs to be managed as per a higher risk level than that suggested by their NEWS2 score alone. **[2024]**

How the recommendations might affect practice

The NEWS2 is already in use in most NHS acute care settings, emergency departments, ambulance services and mental health facilities in England. The committee agreed that recommending its use to evaluate risk of severe illness or death from sepsis in these settings would further improve consistency in the detection of and response to acute illness due to sepsis (for people for whom the NEWS2 can be used), at no further cost. **[2024]**

Return to recommendation 1.1.8

Return to recommendations 1.11.4 to 1.11.9

Outside acute hospital settings

Recommendation 1.12.3, recommendations 1.12.4 and 1.12.5, recommendations 1.12.6 and 1.12.8 and recommendation 1.12.11

Why the committee made the recommendations

When to transfer immediately: people in mental health settings

There was no evidence identified for acute mental health settings, so the committee recommended following local emergency protocols. **[2024]**

Transfer by ambulance for people with consecutive NEWS2 scores of 5 or

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above

The committee considered:

- settings and situations where a clinician with core competencies in the care of acutely ill patients may not be present, such as ambulances and mental health facilities
- important issues faced in rural areas, where transport to the nearest appropriate acute setting might take longer than in urban areas
- existing local and personal arrangements.

Because evidence shows a higher risk of acute deterioration in people with suspected sepsis and a persistent NEWS2 score of 5 or more, which would require timely management and treatment, they agreed that time-critical transfer and pre-alerting the hospital should be considered for these people. **[2024]**

Managing the condition while awaiting transfer

In remote and rural locations, there can be a long delay between a person initially being assessed as at high risk of severe illness or death from sepsis, and the assessment in the emergency department. To address this issue, the committee made recommendations on giving antibiotics outside of hospital. **[2016, amended 2024] [2024]**

In ambulance crews, only some paramedics are able to prescribe antibiotics. There is also variation in how services are organised across the country. Because of this, the committee did not think they could make detailed recommendations for all ambulance services, so they recommended following local guidelines. **[2024]**

The committee discussed the importance of antimicrobial stewardship and the potential for the recommendations to increase the use of broad-spectrum antibiotics. The committee did not think this would be an issue because:

- the recommendations only cover people at high risk of severe illness or death from sepsis, which narrows the group that could potentially receive broad-spectrum antibiotics
- this group will be narrowed further because broad-spectrum antibiotics will only be given to people if combined transfer and handover times to emergency departments are greater than 1 hour.

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If immediate transfer is not required: people in mental health settings

No evidence was identified for acute mental health settings, so the committee made recommendations based on their expertise and experience.

The committee agreed that, in acute mental health settings, immediate transfer will not always be needed for people with a moderate, low or very low risk of severe illness and death from sepsis. **[2024]**

In people at moderate risk of severe illness or death from sepsis, the committee agreed that transfer to hospital may be needed, depending on the definitive diagnosis of the person's condition and whether it could be treated safely outside of hospital. The committee was aware that not all mental health settings would have the expertise to assess this, or to manage suspected sepsis or any other suspected or confirmed physical health conditions. Because of the variation in services, and the lack of evidence, the committee recommended following local emergency protocols on treatment and ambulance transfer. **[2024]**.

People at low or very low risk of severe illness and death do not need immediate transfer, but their level of risk can still change rapidly. The committee recommended providing information to these people about which symptoms to monitor and how to access medical care if there are any causes for concern. **[2024]**.

How the recommendations might affect practice

The committee carefully considered the threshold at which to prompt immediate transfer, to avoid an excessively high volume of referrals, that would put undue pressure on emergency departments and acute hospital wards, while also avoiding geographical inequalities associated with transfer time. The committee strived to create a better balance while avoiding a negative impact on current practice. **[2024]**

If not already in place, rural ambulance services may need to produce local guidance or put mechanisms in place to ensure antibiotics can be prescribed for people at high risk of severe illness or death from sepsis. This may involve:

- setting up processes for purchasing and storing broad-spectrum antibiotics
- collecting information from GPs, acute mental health settings or the emergency operator during a handover

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- assessing existing resources within ambulance crews and how they are used across the service.

The recommendations may represent a big change in practice for some services, but once the relevant mechanisms are in place the resource impact on services would be minimal.

Return to recommendations

Managing suspected sepsis in acute hospital settings

Type and timing of antibiotics

Recommendations 1.13.3, 1.13.9, 1.13.10, 1.13.14, 1.13.15 and recommendation 1.14.1

Why the committee made the recommendations

Timing of antibiotics

Given the lack of direct evidence, the committee decided, by consensus, to recommend adopting the initial antimicrobial treatment of sepsis outlined in the 2022 AoMRC statement. That is, antibiotics should be offered to people with low, moderate and high risk of severe illness or death from sepsis, within a timeframe that depends on risk level. They should also be offered to people at very low risk, on a need for basis, in line with local practice.

The committee highlighted that:

- the purpose of deferring antibiotic delivery is not to delay treatment, but to have extra time to gather information for a more specific diagnosis, allowing for more targeted treatment
- the 1-, 3- and 6-hour time limits are a maximum (rather than an aim) for each risk level
- clinical judgement is key when considering someone's specific care needs.

This explains why they also recommended that once a decision is made to give antimicrobials, administration should not be delayed any further.

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The committee agreed that basing the risk evaluation and antibiotic delivery time on the NEWS2 would ensure due consideration is given to both patient safety and antimicrobial stewardship. **[2024]**

Single parameter contributing 3 points to a NEWS2 score

The committee agreed that a single parameter contributing 3 points to a person's NEWS2 score may be suggestive of organ dysfunction. The dysfunction may be caused either:

- by something other than the current infection or
- by the body's dysregulated response to the infection leading to organ failure (that is, by sepsis).

Based on their clinical expertise, the committee concluded that, if the likely cause of the 3 points in 1 parameter is the current infection, the person's risk of severe illness or death from sepsis is higher than that indicated by their NEWS2 score alone and the timeframe for antibiotic treatment should be adjusted accordingly. **[2024, amended 2024]**

When to count time from (time zero)

To guide the appropriate timing for delivering antibiotics, the committee discussed what constitutes time zero. After careful consideration, they agreed to define it as 'a first NEWS2 score calculated on initial assessment in the emergency department or on ward deterioration' and accompanied by suspected or confirmed infection. This is in line with the AoMRC report.

However, the committee raised concerns about possible inequalities and delays in clinical assessment and subsequent reviews that may be due to:

- geographical variability in transfer time and
- the high influx of patients and already strained NHS system. **[2024]**

They recognised that a long time might elapse between the moment a patient is first deemed to be at high risk and that of initial assessment in an emergency department, so they also agreed to make recommendations to address this issue. To this end, they wrote a new recommendation and amended, by consensus, an existing recommendation from the 2016 guideline to take account of situations where not only transfer time but also

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possible delays between arrival and initial assessment in the emergency department take more than 1 hour. For more information, see the explanation of the recommendations on managing the condition while awaiting transfer.

Type of antibiotics

As part of giving due consideration to both patient safety and antimicrobial stewardship, the committee agreed that:

- for people with suspected sepsis for whom the source of infection is unknown, broad-spectrum antibiotic treatment should be given within the recommended timeframe for the person's risk category
- once the source of infection is confirmed, source specific antibiotics should be used instead. **[2024]**

How the recommendations might affect practice

For ambulance services, mental health settings, and acute hospitals that are already using the NEWS2, the recommendations will not have a major impact on practice. Basing risk stratification and timing of antibiotics on NEWS2 score will balance patient safety, antimicrobial stewardship and resource capacity constraints. **[2024]**

Return to recommendations 1.13.3, 1.13.9, 1.13.10, 1.13.14, 1.13.15

Return to recommendation 1.14.1

High and moderate risk of severe illness or death from sepsis

Recommendations 1.13.2, 1.13.7, 1.13.8 and 1.13.11

Why the committee made the recommendations

The committee noted the importance of clear escalation pathways for care of people at high and moderate risk of severe illness or death from sepsis.

The committee recommended that clinicians with core competencies in the care of acutely ill patients (FY2 or above) conduct the initial assessment, because they have the

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competencies needed for this and should be able to assess people more urgently.

People at high risk are severely ill and may benefit from additional expertise in the management of their condition. Referral to the senior clinical decision maker is recommended because these senior doctors would be able to provide a more accurate diagnosis. Consultants can bring further expertise, but they may have limited availability, so the committee recommended that clinical judgement should be used when deciding if a discussion with a consultant is needed. **[2024]**.

For people at high risk, the committee broadened the 2016 recommendation on escalation to cover lack of response within 1 hour of any intervention (the original recommendation only covered response to fluids and antibiotics). Given the level of risk for this group, the committee also felt it was appropriate to involve the senior clinical decision maker, the responsible consultant and the critical care specialist or team.

For people at moderate risk whose NEWS2 score remains the same or goes up following reassessment, there is a higher risk of poor outcomes and prompt intervention may be needed. Because of this, the committee recommended that care for this group should be escalated to a clinician with core competencies in the care of acutely ill patients.

How the recommendations might affect practice

The recommendation on initial assessment will ensure people are assessed quickly by a clinician with core competencies in the care of acutely ill patients and are able to start treatment without having to wait for a more senior doctor. This will allow treatment to start sooner and reduce pressure on more senior doctors.

The updated recommendation on escalation will reduce the number of referrals to critical care, as this is now only recommended for people who are not responding to interventions. The involvement of the senior clinical decision maker and responsible consultant is already current practice for people who are not responding to interventions, so this will not have a resource impact.

For people at moderate risk whose condition has not improved or deteriorated, escalation to a clinician with core competencies in the care of acutely ill patients is already current practice and so will not have a resource impact.

Return to recommendations

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Discharge

Recommendation 1.13.18

Why the committee made the recommendation

By consensus, the committee removed recommendations on discharge for people at moderate and low risk of severe illness or death from sepsis. The committee did not think that the initial management period was the right time to consider discharge for people at these risk levels. The section of the 2016 recommendations on providing information and safety netting was retained, as this is applicable to everyone with suspected sepsis when they are eventually ready for discharge.

How the recommendation might affect practice

This change to the recommendations is not expected to have a significant impact on practice, because safety netting information should already be provided to people who have had suspected sepsis.

Return to recommendation

Low or very low risk of severe illness or death from sepsis

Recommendations 1.13.13 and 1.13.16, and recommendation 1.13.17

Why the committee made the recommendations

The committee agreed, based on their experience, that, all registered health practitioners would be capable of conducting the initial assessment for people at low or very low risk of suspected sepsis.

Antibiotics are more likely to be needed for people whose NEWS2 score remains the same or goes up following reassessment. Because of this, the committee recommended that care for this group should be escalated to a clinician with core competencies in the care of acutely ill patients.

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How the recommendations might affect practice

The recommendations may free up senior clinician capacity.

Return to recommendations

Finding and controlling the source of infection

Recommendation 1.3.10 (amended), recommendation 1.13.1 and recommendation 1.17.4

Why the committee made the recommendations

The 2016 recommendation on involving surgical teams only covered intra-abdominal and pelvic infections. Infections at other sites can be treated surgically or radiologically, and the committee expanded the recommendation by consensus to address this.

The committee discussed the timing of interventions and agreed that this would vary depending on:

- the patient
- where the source of infection was
- if the intervention would be surgical or radiological
- if an interventional radiologist was available.

Because of this, the committee could not recommend a specific timeframe for interventions. However, they agreed that interventions should be carried out as soon as possible.

How the recommendations might affect practice

Prompt source control could mean fewer critical care interventions are needed at a later point, which would reduce costs.

Return to recommendation 1.3.10

Return to recommendation 1.13.1

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Return to recommendation 1.17.4

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Context

Sepsis is a clinical syndrome caused by the body's immune and coagulation systems being switched on by an infection. Sepsis with shock is a life-threatening condition that is characterised by low blood pressure despite adequate fluid replacement, and organ dysfunction or failure. Sepsis is an important cause of death in people of all ages. Both a UK Parliamentary and Health Service Ombudsman enquiry (2013) and a UK National Confidential Enquiry into Patient Outcome and Death (NCEPOD, 2015) highlighted sepsis as being a leading cause of avoidable death that kills more people than breast, bowel and prostate cancer combined.

Sepsis is difficult to diagnose with certainty. Although people with sepsis may have a history of infection, fever is not present in all cases. The signs and symptoms of sepsis can be very non-specific and can be missed if clinicians do not think 'could this be sepsis?'. In the same way that healthcare professionals consider 'could this pain be cardiac in origin?' when presented with someone of any age with chest pain this guideline aims to make 'could this be sepsis?' the first consideration for anyone presenting with a possible infection.

Detailed guidelines exist for the management of sepsis in adult and paediatric intensive care units, and by intensive care clinicians called to other settings. To reduce avoidable deaths, people with sepsis need to be recognised early and treatment initiated. This guideline aims to ensure healthcare systems in all clinical settings consider sepsis as an immediate life-threatening condition that should be recognised and treated as an emergency. The guideline outlines the immediate actions needed for those with suspicion of sepsis and who are at highest risk of morbidity and mortality from sepsis. It provides a framework for risk assessment, treatment and follow-up or 'safety netting' of people not needing immediate resuscitation. The intention of this guideline is to ensure that all people with sepsis due to any cause are recognised and initial treatment initiated before definitive treatment on other specific pathways is instituted.

Previous terminology included terms SIRS (systematic inflammatory response syndrome), severe sepsis and septic shock but more recent terminology suggests using terms sepsis and septic shock only. Sepsis is defined as a life-threatening organ dysfunction due to a dysregulated host response to infection and septic shock as persisting hypotension requiring vasopressors to maintain a mean arterial pressure (MAP) of 65 mmHg or more and having a serum lactate level of greater than 2 mmol/l despite adequate volume

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resuscitation. Neither of these definitions are useful in early identification of people at risk and the guideline recommends actions according to clinical parameters that stratify risk of severe illness or death from sepsis.

There is significant overlap between this guideline and other NICE guidance, in particular the care of acutely ill patients in hospital, the assessment and initial management of fever in under 5s, bacterial meningitis and meningococcal disease, neutropenic sepsis, antibiotics for prevention and treatment of neonatal infection, and pneumonia in adults.

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Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic pages on sepsis and antimicrobial stewardship.

To find out about all the updates to the sepsis guideline, see the NICE sepsis hub page.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

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Update information

March 2024: We have replaced a recommendation on contraindications to lumbar puncture with a link to the section on lumbar puncture in the updated NICE guideline on bacterial meningitis and meningococcal disease. This recommendation is marked **[2024]**.

January 2024: We have reviewed the evidence and made new recommendations on risk evaluation and management of suspected sepsis for people aged 16 or over who are not and have not recently been pregnant, in mental health, ambulance and acute hospital settings. This covers the population and settings in which the national early warning score (NEWS2) applies. These recommendations are marked **[2024]**.

We have also made some changes without an evidence review. These are marked **[2016, amended 2024]**.

- Recommendations have been updated on when to use an early warning score to assess people with suspected sepsis.
- Some recommendations have been updated and one recommendation was added to ensure better communication and inclusivity (for example, for people with learning disabilities and autism).
- Recommendations on when to suspect neutropenic sepsis were updated and the reference to NICE's guideline on neutropenic sepsis was broadened to cover immunosuppression unrelated to cancer.
- The recommendations on when GPs and ambulance services should consider having mechanisms in place to give antibiotics to people at high risk of severe illness or death from sepsis were updated to ensure due consideration is given to both patient safety and antimicrobial stewardship.
- The recommendations on identifying the source of infection and involving surgical teams were broadened to cover risk of sepsis in all parts of the body and a wider range of interventions.
- For safety reasons, people with spinal cord injury were added to the list of people whose temperature may not rise when they have sepsis.
- Recommendations for people under 16 and pregnant or recently pregnant were

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amended to align them with changes made for people aged 16 or over for consistency.

We have also made some presentational changes without changing the meaning of the recommendations. These recommendations are marked **[2016]**.

- The population covered by the guideline has been divided into different subgroups, as part of the changes to incorporate the NEWS2. We have done this without changing the meaning of the recommendations for people under 16 or pregnant people.
- Duplication between the tables and recommendations was removed.
- The recommendations have been aligned with other guidelines that have been updated.
- Changes have been made to the wording to bring the language and style up to date.

October 2022: We added text to indicate that pulse oximetry may be less reliable in people with dark skin. We also added a link to the NHS patient safety alert on the risk of harm from inappropriate placement of pulse oximeter probes.

In recommendation 1.15.2 we updated the volume of fluid bolus used for intravenous fluid resuscitation from 20 ml/kg to 10 ml/kg in children and young people up to 16 years. See the surveillance report for more information.

September 2017: Table 1 was corrected to give oxygen saturation as less than 92% in air. Table 2 was amended to include tympanic temperature as a moderate risk factor. Table 1 was amended to add pallor of skin, lips or tongue as an intermediate to high risk factor.

Minor changes since publication

July 2024: We amended the wording of recommendation 1.1.4 for better inclusivity (for example, for people with learning disabilities and autism).

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